

REMARKS

The Office Action of July 3, 2007 has been carefully studied. No claims have yet to be allowed.

The following paragraphs correspond to the order of the paragraphs of the Office Action.

Specification

Applicants have not become aware of any minor errors in the specification, but if the Examiner becomes aware of same, Applicants will correct them accordingly. Also, there are no copending applications referenced in the present application.

Claim Rejections - 35 U.S.C. 112/101

Claims 15 and 16 as well as other process claims introduced by amendment are now proper method claims rather than "use" claims. In the event of any restriction requirement, Applicants will not traverse the requirement, but rather will request rejoinder of the process claims.

Claim Rejections - 35 U.S.C. 112

Claim 1 is amended to point out that the non-homogeneous adsorbent comprises a core having a size between 0.2 and 50 μm and at least one crystalline continuous outer layer having a thickness between 0.1 and 100 μm with the core of the adsorbent having a volume adsorptive capacity representing at least 35% of the volume of the adsorbent, and the outer layer having a diffusional selectivity greater than 5 measured as the ratio of diffusion coefficients (m^2/sec at 200°C of 3-methyl pentane/2,2-dimethyl butane) with the outer layer having a higher diffusional selectivity than the core. As evident from the discussion bridging pages 2 and 3 of the specification, the core functions more as an adsorbent for trapping molecules whereas the outer layer is like a separation membrane permitting only certain molecules to enter and be trapped within the core. The dimensions of the core and outer layer are drawn from the specification on

page 8, lines 18-21 wherein it is stated that a maximum size of the crystalline non-homogeneous adsorbent is 150 μm .

In view of the amendment to the claims, it is respectfully submitted that the basis to withdraw the rejection under 35 U.S.C. 112. However, if further clarifying language is required, Applicants would appreciate any suggestions.

Claim Rejections - 35 U.S.C. 102

Original claims 1-14 were rejected under 35 U.S.C. 1-2(b) as being anticipated by U.S. 4,420,419 to Ogawa et al. Applicants have carefully studied this reference and respectfully submit that the problem solved by Ogawa et al. and the resultant adsorbent are remarkably dissimilar to Applicants' objective and resultant adsorbent.

The objective of Ogawa et al. is to provide an abrasion-resistant granular zeolite which, for example, can be used as an air break dryer which requires sufficient abrasion resistance to resist violent vibrations on the one hand and a water-absorbing property sufficient to prevent condensation, freezing or corrosion (column 1, lines 33-43). The granular zeolite comprises a core and shell, each containing a zeolite and a clay binder, the key to the Ogawa et al. invention being the use of a clay binder in a concentration higher by at least 10 weight percent in the binder content in the core, along with specified core/shell weight ratios and zeolite/binder weight ratios. The resultant granular zeolite has an improved abrasion resistance and compression strength as well as a high adsorption rate and adsorptive capacity.

There are several major distinctions between Applicants' invention and that of Ogawa et al.:

1. The granular zeolite of Ogawa et al. is in the form of spherical particles having a particle size of 0.5 to 10 mm (column 4, lines 58-63), well above Applicants' maximum particle size of the combined core and shell of 150 μm . In other words, the minimum particle size of Ogawa et al. is more than three times the maximum particle size of Applicants' adsorbent.
2. The non-homogeneity of the granular Ogawa et al. is caused by the different percentages of the clay binder in the shell and in the core of the granule. Whereas as in Applicants' invention the non-homogeneity is not caused by a different concentration of clay

binder outside the crystalline adsorbent but rather by a difference within the crystalline adsorbent itself.

3. Referring to Applicants' dependent claim 12 which requires that both the core and the outer layer contain zeolites with the zeolite in the core being different than the zeolite in the outer layer. In contrast, in Ogawa et al., there is no suggestion whatsoever of utilizing different zeolites in the outer layer and the core since the fundamental improvement in Ogawa et al. resides in the use of different concentrations of the clay binder, not in any difference in zeolites. (It is acknowledged that on column 3, lines 46 and 47 that Ogawa et al. states that the zeolites can be used singly or in the form of a mixture of two or more of them, but this does not suggest that the zeolites used in the outer layer and the core should be different.

4. Applicants' claim 24 requires that the core be empty which flies in the face of the teachings of Ogawa et al.

5. As for claim 27, the "negligible diffusion of resistance" present in the core is drawn from Applicants' specification, page 5, lines 1 and 2 -- providing a major distinction between the diffusional selectivity of the core and the outer layer, which again is nowise shown by Ogawa et al. which uses the same crystalline material in the core and the outer layer.

As will be seen from other newly added dependent claims, still further distinctions are provided between the relatively large granular material of Ogawa et al. wherein the non-homogeneity resides in a concentration of clay binder in the shell and core in contrast to the non-homogeneity in Applicants' absorbent which occurs within the crystalline material itself.

In view of the above amendments and remarks, favorable reconsideration is courteously requested. If there are any residual issues which can be expeditiously resolved by a telephone conference, the Examiner is courteously invited to telephone Counsel at the number indicated below. If Counsel is unavailable, the Examiner is invited to telephone Ms. Richardson at 703-812-5326 who will enlist the services of another attorney.

The Commissioner is hereby authorized to charge any fees associated with this response or credit any overpayment to Deposit Account No. 13-3402.

Respectfully submitted,

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